OLD BUSINESS

1. Approval of the April 8, 2010, Meeting Minutes – G. Johnson

The April 8, 2010, meeting minutes are approved with minor modifications.


The EOC approved the *Michigan Roundabout Guide* at its November 1, 2007, meeting. EOC approval is currently required whenever one or more of the following criteria are identified:

- Whenever pedestrian access is present.
- Major changes in pedestrian traffic are expected. These changes may be the result of known future development that will generate significant volumes of pedestrian traffic, such as schools, shopping centers, or residential developments.

EOC approval of a roundabout for compliance with ADA requirements is required.

Recently EOC reviewed a roundabout and addressed safety concerns, although it did not meet the criteria for EOC review.

**ACTION:** Greg Johnson requested that all roundabouts be submitted for EOC approval. This supersedes the criteria identified in the *Michigan Roundabout Guide* approved at the November 1, 2007, meeting.
NEW BUSINESS

1. Pavement Selections – B. Krom

   a. I-94/I-69 Reconstruction: CS 77111, JN 87024

      The reconstruction alternatives considered were a hot mix asphalt (HMA) pavement (Alternative 1 – Equivalent Uniform Annual Cost [EUAC] $107,228/directional mile) and a jointed plain concrete pavement (Alternative 2 – EUAC $62,127/directional mile). A life cycle cost analysis was performed and Alternative 2 was approved based on having the lowest EUAC. The pavement design and cost analysis are as follows:

      11”............................. Non-Reinforced Concrete Pavement, P1 Modified, w/14’ jt spacing
      16”............................................................ Open Graded Drainage Course (mainline)
      6” dia.............................................................. Open-graded Underdrain System
      24.5”................................................................. Total Thickness

      Present Value Initial Construction Cost....................................... $964,254/directional mile
      Present Value Initial User Cost.................................................. $89,682/directional mile
      Present Value Maintenance Cost ................................................... $96,038/directional mile
      Equivalent Uniform Annual Cost .................................................. $62,127/directional mile

   b. I-196 Reconstruction: CS 03032, 03034 & 03035, JN 103152

      The reconstruction alternatives considered were a HMA pavement (Alternative 1 – EUAC $83,532/directional mile) and a jointed plain concrete pavement (Alternative 2 – EUAC $76,166/directional mile). A life cycle cost analysis was performed and Alternative 2 was approved based on having the lowest EUAC. The pavement design and cost analysis are as follows:

      10.50”........Jointed Plain Concrete Pavement w/14’ joint spacing (mainline & shoulders)
      6.00”......................................................... Open-Graded Drainage Course (mainline & shoulders)
      10.00”.......................................................... Sand Subbase
      26.50”................................................................. Total Thickness

      Present Value Initial Construction Cost.................................... $1,051,211/directional mile
      Present Value Initial User Cost................................................ $280,920/directional mile
      Present Value Maintenance Cost ................................................... $77,709/directional mile
      Equivalent Uniform Annual Cost .................................................. $76,166/directional mile
c. US-131 Construction of Constantine Bypass: CS 78015, JN 46269

The reconstruction alternatives considered were a HMA pavement (Alternative 1 – EUAC $38,207/mile) and a jointed plain concrete pavement (Alternative 2 – EUAC $47,186/mile). A life cycle cost analysis was performed and Alternative 1 was approved based on having the lowest EUAC. The pavement design and cost analysis are as follows:

- 2" HMA, 5E10, Top Course (mainline)
- 3" HMA, 3E10, Leveling Course (mainline)
- 3.5" HMA, 3E10, Base Course (mainline)
- 2" HMA, 5E03, Top Course (shoulders)
- 3.5" HMA, 3E03, Leveling Course (shoulders)
- 6" Aggregate Base (mainline)
- 9" Aggregate Base (shoulders)
- 18" Sand Subbase
- 6" dia. Underdrain System
- 32.5" Total Section Thickness

Present Value Initial Construction Cost $684,068/mile
Present Value Initial User Cost $0/mile
Present Value Maintenance Cost $94,698/mile
Equivalent Uniform Annual Cost $38,207/mile


This project initially followed the standard LCCA procedure to determine pavement type, with the original LCCA being sent for industry review in November 2009. The low cost alternative was concrete with an EUAC difference of 8.9 percent. The Asphalt Pavement Association of Michigan opposed the LCCA and proposed several HMA sections that were structurally equivalent, but less expensive to construct. Pavement design staff critiqued and adjusted the proposed designs slightly to meeting MDOT standards, then sent an updated LCCA for a second industry review in late January 2010. In this updated LCCA, HMA was the low cost alternative with an EUAC difference of 7.2 percent. The Michigan Concrete Association opposed the updated LCCA claiming it was “in direct conflict with MDOT stated and practiced policy.” A meeting was held with the paving industries in mid-April to listen to their concerns. In early May, the decision was made that this project should proceed as an alternate pavement bidding project.

ACTION: EOC approves the alternate pavement bidding, pending FHWA approval.


The Division of Operations is recommending approval of revisions to the following Geometric Design Guides;
• GEO-300-D Diamond Interchange (Dual Units)
• GEO-310-C Collector –Distributor Road
• GEO-370-D Ramp Terminal Details (Dual Units)
• GEO-400-B Urban Diamond Interchange (Dual Units)
• GEO-510 Truck Loon
• GEO-650-D Flares and intersection Details (Dual Units)
• GEO-670-D Crossovers (Dual Units)
• GEO-680-B Commercial Drives
• GEO-690-D Temporary Runaround (Dual Units)

Approval of the revised Geometric Design Guides is requested.

ACTION: EOC approves the revised design guides.


The current training materials were originally developed in 2000, and last updated in 2005. The materials do not include all conditions that traffic regulators work in, such as signalized and un-signalized intersections.

MITA approached MDOT in 2007, following citations from MIOSHA, and requested a team be formed to bring the current training materials up-to-date. MITA also offered to create a new training video, replacing the original video from the same time period.

The new manual is 98 percent complete and nearly ready for printing. The manual has been reviewed through the Work Zone Business Team; however, it has not been reviewed by anyone outside of MDOT. MITA is requesting all users on all roads use the new training materials. The original materials required State Transportation Commission approval since all agencies used them.

The Division of Operations is recommending the following:
• Approve revisions to the Traffic Regulator Training materials for MDOT projects.
• Inform MITA that they should pursue agreements with all other agency representatives before issuing a statewide training manual.

ACTION: EOC approves the revisions and recommendation to inform MITA.

5. Detroit River International Crossing I-75 Interchange, CS 82194, JN 108202 – M. Alghurabi, M. Azam, and M. Chynoweth

MDOT currently does not accept the use of concrete segmental bridge design and construction. The FHWA required MDOT to consider a concrete box girder bridge design during the development of the Engineering Report. It was initially dismissed because of a lack of proof of redundancy. However, a supplemental structure study presenting a precast segmental concrete box girder option concludes that the structure shape and design provides
significant benefits and superior load path, structural and internal redundancy. In addition, concrete box girder offers a significant cost savings based on initial construction costs.

**ACTION:** EOC approves the superstructure options of steel I girder, steel box girders and post tensioned segmental concrete box girder for the I-75 interchange ramp structures. EOC requests the following additional information for the proposed structure types:

- Determine initial construction costs for steel box girders for all ramps.
- Maximize underclearance over 15’0” if a segmental concrete box is used, if possible through a combination of adjusting the profiles for the ramps, and future lowering of I-75.
- Contact other DOTs for criteria for the usage of steel box girders and segmental concrete box girders, and mitigation measures in place for repairs should a segmental concrete box be damaged from a high load hit.
- Refine life cycle cost analysis for steel I girders, steel box girders and segmental concrete box girders, and provide cost estimate every 6 months to EOC.
- Review of mobility for catastrophic events.
- Preventative maintenance plan for the structure types.
- Structural designs to incorporate bearing replacement for post tensioned segmental concrete box girders.

EOC also recommends maximizing the structure underclearances of these ramp structures.

(Signed Copy on File at C&T)

Eric Burns for Brenda J. O’Brien, Secretary
Engineering Operations Committee

EB:kar

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